

LISTING OF PENDING CLAIMS:

This is a listing of the claims currently pending in this application:

1-25. (Canceled)

26. (Previously Presented) An apparatus for control of an extracorporeal blood circuit connected to a blood purification machine, said extracorporeal blood circuit comprising an access branch, having one end connected to at least one blood treatment element inlet and another end connected to a patient, a return branch, having one end connected to an outlet of said at least one blood treatment element and another end connected to a patient; said apparatus comprising:

a sensor located in the access branch upstream of all blood treatment elements for measuring a first temperature of blood leaving a patient along the access branch upstream of said at least one blood treatment element;

a temperature regulating device for regulating said blood temperature in the extracorporeal blood circuit, said temperature regulating device comprising a line conveying a fluid, said line being coupled to a portion of the return branch downstream of all blood treatment elements to form a heat exchanger directly before blood is returned to the patient; and

a control unit connected to said temperature regulating device for controlling the blood temperature by controlling the temperature of the fluid conveyed in said line as a function of said first temperature and of a reference temperature.

27. (Canceled)

28. (Previously Presented) An apparatus according to claim 26, wherein said fluid in said line is capable of being heated to a fluid temperature lying within a specified range about 37°C.

29. (Previously Presented) An apparatus according to claim 26, wherein said regulating device has a seat for housing said portion of the return branch.

30. (Previously Presented) An apparatus according to claim 26, wherein said extracorporeal blood circuit is connected to a pump for conveying blood along the extracorporeal blood circuit, the apparatus comprising a sensor for detecting the operating state of said pump, the control unit maintaining the fluid temperature of said fluid equal to said reference temperature when said pump is not in operation.

31. (Previously Presented) An apparatus according to claim 26, wherein said return branch comprises an expansion chamber, said portion of the return branch being located downstream of the expansion chamber.

32. (Previously Presented) An apparatus according to claim 26, wherein said at least one blood treatment element is formed by a hemodialysis filter comprising a blood compartment and a dialysate compartment, said dialysate compartment having a dialysate flowing therein.

33. (Previously Presented) An apparatus according to claim 26, wherein said at least one blood treatment element comprises a hemodialysis filter comprising a blood compartment and a dialysate compartment, said dialysate compartment having a dialysate flowing therein, and an expansion chamber, said expansion chamber receiving a replacement fluid.

34. (Previously Presented) An apparatus according to claim 26, wherein said at least one blood treatment element is formed by a hemofiltration filter.

35. (Previously Presented) An apparatus according to claim 26, wherein said at least one blood treatment element comprises a hemofiltration filter and an expansion chamber, said expansion chamber receiving a replacement fluid.

36. (Previously Presented) An apparatus according to claim 26, wherein said control unit controls the temperature of the fluid in said line, to regulate the blood temperature in the extracorporeal blood circuit, as a function of the first temperature and of the reference temperature at predetermined intervals of time.

37. (Previously Presented) An apparatus according to claim 26 or 36, wherein said control unit controls the temperature of the fluid in said line, to regulate the blood temperature in the extracorporeal blood circuit, as a function of a difference between the first temperature and the reference temperature.

38. (Previously Presented) A control method for an extracorporeal blood circuit for the circulation of blood in a blood purification machine, the extracorporeal blood circuit comprising an access branch and a return branch, said access branch and return branch being connected to at least one blood treatment element, the control method comprising the steps of:

connecting the access branch to a patient and to an inlet of said blood treatment element;

connecting the return branch to the patient and to an outlet of said blood treatment element;

measuring a first temperature of the blood in correspondence of said access branch upstream of all blood treatment elements; and

regulating a blood temperature in the extracorporeal blood circuit as a function of the first temperature and of a reference temperature, the blood temperature in the extracorporeal blood circuit being regulated along a portion of the return branch and downstream of all blood treatment elements, directly before blood is returned to the patient.

39. (Previously Presented) A control method according to claim 38, wherein the steps of measuring a first temperature of blood leaving a patient along the access branch and of regulating the blood temperature in the extracorporeal blood circuit as a function of the first temperature and of a reference temperature are repeated at intervals of time.

40. (Previously Presented) A method according to claim 38, wherein a temperature difference between the first temperature and the reference temperature is calculated, said blood temperature in the extracorporeal blood circuit being regulated as a function of said temperature difference.

41. (Previously Presented) A method according to claim 40, further comprising a step of regulating a heat exchange of a heat exchanger, said heat exchanger comprising said portion of the return branch and a temperature regulating device connected to said portion of the return branch.

42. (Previously Presented) A method according to claim 40, wherein heat is withdrawn from blood along said portion of the return branch when said temperature difference is positive.

43. (Previously Presented) A method according to claim 40, wherein heat is supplied to the blood along said portion of the return branch when said temperature difference is negative.

44. (Previously Presented) A method according to claim 38, wherein a fluid is conveyed along said temperature regulating device, said fluid having a fluid temperature that varies within a specified range about 37° C.

45. (Previously Presented) A method according to claim 44, wherein blood is conveyed along the extracorporeal blood circuit by means of a pump, a state of operation of the pump being detected, the fluid temperature being regulated as a function of the first temperature and of the reference temperature, and the fluid temperature being kept equal to the reference temperature when the pump is not in operation.

46. (Previously Presented) A method according to claim 38, wherein the reference temperature is varied according to a specified profile.

47. (Previously Presented) A method according to claim 38, wherein said extracorporeal blood circuit is used for a hemodialysis treatment; said at least one blood treatment element being formed by a hemodialysis filter through which blood and a dialysate flow in a counterflow mode.

48. (Previously Presented) A method according claim 38, wherein said extracorporeal blood circuit is used for a hemodiafiltration treatment; said at least one blood treatment element comprising a hemodialysis filter through which blood and a dialysate flow in a counterflow mode, said at least one blood treatment element further comprising an expansion chamber supplied with a replacement fluid.

49. (Previously Presented) A method according to claim 38, wherein said extracorporeal blood circuit is used for a pure hemofiltration treatment, said at least one blood treatment element comprising a hemofiltration filter through which blood flows.

50. (Previously Presented) A method according to claim 38, wherein said extracorporeal blood circuit is used for a hemofiltration treatment, said at least one blood treatment element comprising a hemofiltration filter through which blood flows, said at least one blood treatment element further comprising an expansion chamber supplied with a replacement fluid.